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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,203	09/24/2004	Takuya Kitamura	450100-04403	5167

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EXAMINER	
YEH, EUENG NAN	

ART UNIT	PAPER NUMBER
2624	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/509,203	KITAMURA, TAKUYA	
	Examiner	Art Unit	
	Eueng-nan Yeh	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :May 7, 2007; Feb 5, 2007; Sep 24, 2004.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The title of the invention, "Image Compression Encoding Apparatus and Image Compression Encoding Method, and Program" is too general to reveal the real intention to which the claims are directed. A new title is suggested: "An image compression system with coding quantity control".

3. The abstract of the disclosure is objected to because it has only one single sentence and hard to follow. The abstract is an adequate and clear statement of the disclosure. The abstract should be in a brief narrative of the disclosure as a whole and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. The content of a patent abstract should be such as to enable the reader thereof, regardless of his or her degree of familiarity with patent documents, to determine quickly from a cursory inspection of the nature and gist of the technical disclosure. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

> Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.
>
> When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare In re Lowry, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and Warmerdam, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).
>
> In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claim 19 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 19 defines a computer program embodying functional descriptive material. However, the claim does not

define a computer-readable medium or computer-readable memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests amending the claim(s) to embody the program on "computer-readable medium" or equivalent; assuming the specification does NOT define the computer readable medium as a "signal", "carrier wave", or "transmission medium" which are deemed non-statutory (refer to "note" below). Any amendment to the claim should be commensurate with its corresponding disclosure.

Note:

A "signal" (or equivalent) embodying functional descriptive material is neither a process nor a product (i.e., a tangible "thing") and therefore does not fall within one of the four statutory classes of § 101. Rather, "signal" is a form of energy, in the absence of any physical structure or tangible material.

Should the full scope of the claim as properly read in light of the disclosure encompass non-statutory subject matter such as a "signal", the claim as a whole would be non-statutory. In the case where the specification defines the computer

readable medium or memory as statutory tangible products such as a hard drive, ROM, RAM, etc, as well as a non-statutory entity such as a "signal", "carrier wave", or "transmission medium", the examiner suggests amending the claim to *include* the disclosed tangible computer readable media, while at the same time *excluding* the intangible media such as signals, carrier waves, etc.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-2, 6-11, and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Stone et al. (WO 02/07447 A1) and Jang et al. (US 6,028,896).

Regarding claims 1 (apparatus), 10 (method), and 19 (program), Stone discloses a compressing system comprising:

calculating means, on encoding system selection basis, either code quantities obtained by the first compression system or code quantities obtained by the second compression system (as depicted in figure 3, numerals 12 and 14: "figure 3 a data encoding processor 10 is shown to comprise first and second data

encoder 12, 14 each of which is arranged to receive video data from a connecting channel 16" at page 10, line 28. See also "the first encoding process is the DCT transform process and the second encoding process is the DPCM prediction process" at page 13, line 7);

selector means for selecting, on the encoding system selection basis, the first compression system or the second compression system (as depicted in figure 3, numeral 24: "a controllable switch 24 which is arranged to select one of the first or the second encoded blocks" at page 11, line 5);

compression encoding means for compression-encoding image signals of the respective encoding system selection bases by using the compression system selected by the selector means (as depicted in figure 3, numeral 40: "an entropy encoder 40 in dependence upon a control signal received from a switch control channel 28 from a selection processor 30. The entropy encoder performs and entropy encoding scheme such as Huffman encoding or VLC encoding ..." at page 11, line 6).

Stone does not explicitly disclose a compression system to do the addition to get the total code quantity.

Jang, in the same field of endeavor of video encoder ("a method for controlling the data bit rate of a video encoder" at column 1, line 6), teaches a bit rate control system "a method for controlling the data bit rate of a differential pulse code modulation/discrete cosine transform (DPCM/DCT) video encoder, comprising the steps of: determining an initial bit allocation amount for every

group of pictures (GOP) of an input video; allocating bits for every picture of each GOP; allocating bits for every macroblock of each picture; determining a quantizer step parameter based on the bit allocation amount; and determining a quantizer step size proportional to the determined quantizer step parameter" at column 3, line 22. Without departing from the scope and spirit of Jang's methodology, the bit allocation amount for GOP, picture, or block is a way to calculate the code quantity.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to provide the compression system Stone made with code quantity calculation as taught by Jang, to control the data bit rate "thereby enabling the encoder to exhibit a superior performance" at column 3, line 18.

Regarding claims 2 and 11, the Stone and Jang combination discloses: the first compression system and/or the second compression system are a system of respectively quantizing the image signal by plural different quantization steps (as depicted in Stone figure 6, "DCT transformed data block is then fed to each of a plurality of quantization processors Q1, Q2, Q3, ... QN. Each of the quantization processors is arranged to quantize the DCT coefficients of the transformed data block in accordance with one of the quantization amounts as illustrated, for example, by the discrete representations shown in figure 2b" at Stone page 13, line 13. Wherein "figure 1b provides a more practical determination of the quantization step size" at Stone page 10, line 11),

determination means for comparing the total code quantity calculated by the calculating means and the target code quantity in the equi-length unit to determine quantization step at the first compression system in accordance with the comparison result (as discussed in claims 1 and 10, the selector means to select one system from first system or second system. "A bit allocator 90 *(figure 6)* is then arranged to select the version of the quantized and transform encoded data block for a minimum quantization level which still satisfies the selected bit amount as determined from the control signal from the control channel 18" at Stone page 13, line 21. The bit amount from the control signal can be considered as the target code quantity. The combination of Stone and Jang teaches comparing the total code quantity and the target code quantity to determine quantization step at the first compression system in accordance with the comparison result);

selector means selects, on the encoding system selection basis, either one of the first compression system and the second compression system of performing quantization by the quantization step determined by the determination means (as depicted in Stone figure 3, "selection processor 30 also receives the value of the quantization used by the first and second encoders 12, 14 via connecting channels 36, 38" at page 11, line 13. "a controllable switch 24 which is arranged to select one of the first or the second encoded blocks, which are fed to an entropy encoder 40 in dependence upon a control signal received from a switch control channel 28 from a selection processor 30" at page 11, line 5).

Regarding claims 6 and 15, the first compression system is a system of performing DCT (Discrete Cosine Transform) of the image signal to quantize the image signal which has been caused to undergo DCT (discussed in claims 1 and 10, "the first encoding process is the DCT transform process " at Stone page 13, line 7).

Regarding claims 7, 8, 16, and 17 (discussed in claims 1 and 10, "the second encoding process is the DPCM prediction process" at Stone page 13, line 8. The DPCM (Differential Pulse Code Modulation) processing system is a lossless system).

Regarding claims 9 and 18, the calculating means adds, on the encoding system selection basis, smaller one of code quantities obtained by the first compression system and code quantities obtained by the second compression system ("A bit allocator 90 *(figure 6)* is then arranged to select the version of the quantized and transform encoded data block for a minimum quantization level which still satisfies the selected bit amount as determined from the control signal from the control channel 18" at Stone page 13, line 21. Thus, the combination of Stone and Jang teaches that the addition to calculate the total bit amount bases on the smaller code quantity between first and second compression system).

7. Claims 3-5 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Stone and Jang as applied to claims discussed above, and further in view of Shoda et al. (US 2003/0053115 A1).

Regarding claims 3-5 and 12-14, the Stone and Jang combination discloses a compression system with DCT and DPCM processors. The Stone and Jang combination does not explicitly disclose the preferential selection between DCT and DPCM.

Shoda, in the same field of endeavor of color image processing ("image compression apparatus and an image decompression apparatus with improved color reproducibility" in paragraph 4, line 2), teaches a color region judging section as depicted in figure 1, numeral 13: "if the color region judgment results in the case it is assumed to have two kinds of quantization tables of chromatic color (coarse quantization value) and achromatic color (fine quantization value) are achromatic, the table with finer quantization values is chosen, and if it is judged chromatic, the table with coarse quantization values is chosen ..." in paragraph 35, line 2. . Without departing from the scope and spirit of Shoda's methodology, the judging section can determine the priority of first processing system and second processing system as:

a. select 1st system or 2nd system with predetermined priority (claims 3, 12),

b. set both systems with equal priority (claims 4, 13),

c. select 2nd system as the preferred system (claims 5, 14).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to provide the compression system of the Stone and Jang combination, to be able define system priority as taught by Shoda, to improve "color reproducibility" in paragraph 4, line 3.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

I. Hirabayashi (US 5,903,669): figure 8 for DCT and DPCM processors.

II. Kosugi (US 6,075,898): Discrete Cosine Transform as an irreversible coding system, Differential Pulse Code Modulation is a reversible coding system.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eueng-nan Yeh whose telephone number is 571-270-1586. The examiner can normally be reached on Monday-Friday 8AM-4:30PM EDT.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on 571-272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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